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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Cotton Division
Washington, D.C.

COTTON FIBER AND PROCESSING TEST RESULTS
CROP OF 1958

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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Cotton Division

COTTON FIBER AND PROCESSING TEST RESULTS, CROP OF 1958 [1/]

Fiber and processing tests have been made on the principal varieties of cotton grown commercially by selected cotton improvement groups in the United States beginning with the crop of 1946. These test results have been reported as promptly as possible upon completion of the tests during the harvesting season, and summarized in a comprehensive publication at the end of each crop year. This initial report on the 1958 crop includes results obtained from early harvested cottons grown in the Lower Rio Grande Valley and the coastal bend of Texas. Cottons included in this report, and in the supplementary reports which will be issued as the harvesting season progresses in these and other areas throughout the Cotton Belt, consist of the modal qualities of the predominant varieties grown in the designated areas. Insofar as is practicable, reports will include test results on early, midseason, and late harvested cottons. These reports will be published at intervals of about three weeks during the early part of the harvesting season and at more frequent intervals as the season progresses.

During the current harvesting season fiber and spinning test results will be published for approximately 140 market areas. Each of the varieties reported will represent in most cases at least 5,000 bales or more of the variety, and therefore the various qualities reported for the area would be available in commercial quantities. Criteria for selection of varieties, market areas, and gin points were modified somewhat this year as compared with previous seasons. Variety selections for a market area were based on the predominant varieties grown in each crop reporting district as contained in the report entitled "Cotton Varieties Planted" which is published each year by the Cotton Division. A selected gin point was required to have at least 75 percent of the total cotton acreage in the gin area planted to the selected variety, and also that there should be at least 5,000 bales of the variety produced in the market area. Once the area and varieties were determined, an effort was made to find a particular gin point which would have an adequate volume of the selected variety from which to collect samples. In most cases, approximately 75 to 100 percent of the total ginnings at each of the selected gin points would be of the specified variety. Aside from the selection of a particular gin point from which to collect samples of a particular variety, no further efforts were made in order to maintain the "purity" of the variety in the sample. It is felt that this method of selection would more nearly compare with the problems faced by cotton merchants and mill buyers engaged in buying cotton. Test results by the above method of sampling should also more adequately represent the area of production and have more meaning when viewed from the standpoint of the crop as a whole.

[1/] Prepared in the Standards and Testing Branch.

The criteria for evaluating the fiber, spinning, and finishing test results are essentially the same as those of former years, and, together with the manufacturing organization and machine settings used for processing, have been described in previous publications. 2/ The spinning lots represent commercially grown cotton of even-running grade and staple length from many bales of each specified variety. Qualities other than those reported are, of course, available in each area as a result of normal harvesting, seasonal, and soil variations.

Processing results for the 1958 crop cottons, as in 1957, will be reported in four groups, each based on a standard rate of card production and a standard twist multiplier. These groups are as follows:

Group No.	Carding Rate Pounds per hour	Twist Multiplier	Staple Length
I	12-1/2	4.40	Short
II	9-1/2	4.00	Medium
III	6-1/2	3.80	Long
IV	4-1/2	3.60	American-Egyptian

Results of fiber and spinning tests herein reported were obtained in essentially the same manner as those reported for the 1957 crop, except as follows:

1. Fiber strength test results made at 1/8-inch gauge spacing will be reported in terms of grams per tex rather than the 1/8-inch strength index previously reported.

2. Nonlint content results by the Shirley Analyzer method will be reported for visible and invisible waste in addition to total nonlint content.

The decision to report fiber strength results obtained at 1/8-inch gauge spacing in terms of grams per tex was made in accordance with the recommendations of the American Society of Testing Materials (ASTM) and the International Standards Organization (ISO) and after consultation with various interested groups and individuals in the textile industry.

A tex unit equals the weight in grams of 1,000 meters of the material. For those wishing to convert the grams/tex units reported here into the 1/8-inch gauge index terms previously reported, the following formula may be used:

2/ Summary of Fiber and Processing Test Results on Some Varieties of Cotton Grown by Selected Cotton Improvement Groups, Crop of 1957, Agricultural Information Bulletin No. 186.

$$\text{Strength Index (1/8-inch gauge)} = \frac{\text{Grams per tex (1/8" gauge)}}{.21692}$$

or

$$\text{Grams per tex (1/8-inch gauge)} = \text{Index (1/8-inch gauge)} \times .21692$$

We are, of course, also reporting strength test results made at "zero" gauge in terms of 1,000 pounds per square inch as this measurement is most commonly used in marketing channels.

FOOTNOTES (Table 1)

1/ Fiber fineness and maturity in combination as measured on untreated samples using the curvilinear scale for upland cotton.

2/ Determined by the Causticaire method using the Micronaire instrument.

3/ Tex is the universal unit for designating linear density of textile materials as adopted by the International Organization for Standardization (ISO). A tex unit equals the weight in grams of 1,000 meters of the material.

4/ As determined by means of the Shirley Analyzer.

5/ Determined by the Nickerson-Hunter Colorimeter on raw stock. R_d values indicate percent reflectance from 0 to 100 and +b values indicate degree of yellowness.

6/ Values below 7.0 indicate acidity. Values above 7.0 indicate alkalinity which when associated with abnormally low sugar content may indicate fiber degradation from the action of micro-organisms.

7/ Based on yarn skein strength (number x strength) of the two yarn numbers spun.

8/ Based on two numbers spun. Index of average quality equals 100.

Table 1.--Results of classification, fiber tests, and carded yarn processing tests for specified varieties of cotton by state, market area, and period of harvest, processed at a card production rate of 9-1/2 pounds per hour and a twist multiplier of 4.00, Crop of 1958

Variety	Deltapine 15		Delfos 9169
State	Texas		
Market area	Raymondville	San Benito	Corpus Christi
Percentage of variety at gin	80	90	80
Period of harvest	Early	Early	Early
RAW COTTON QUALITY			
Classification (official standards)			
Grade--------------------designation	SM	SM	M
Staple length-----------------inches	1-1/32	1-1/32	1-1/32
Fiber length (Fibrograph):			
Upper half mean---------------inches	1.01	1.02	1.02
Uniformity---------------------ratio	81	81	76
Fiber fineness and maturity:			
Micronaire----------------reading 1/	4.8	4.8	3.8
Fineness (Causticaire)-----ug/inch 2/	4.9	4.8	3.9
Maturity (")-------index 2/	80	81	75
Fiber tensile strength (Pressley):			
1/8" Gauge----------grams per tex 3/	21.3	22.7	21.0
Zero " ---------- " " " 3/	39.6	39.6	40.1
" " ---------- 1,000 p.s.i.	80	80	81
Nonlint content: 4/			
Visible waste----------------percent	0.9	1.1	1.0
Invisible waste-------------- "	0.7	0.8	0.9
Total nonlint content--------- "	1.6	1.9	1.9
Color of raw cotton: 5/			
Reflectance-----------------------Rd	74.6	78.5	78.0
Yellowness------------------------+b	9.3	8.8	8.5
Sugar content-----------------percent	0.3	0.3	0.5
Acid-alkaline value---------pH units 6/	7.0	7.2	6.9
PROCESSING RESULTS			
Manufacturing waste:			
Total picker and card waste---percent	6.3	6.1	7.2
Neps--------per 100 sq. in. of card web	12	9	28
Yarn skein strength:			
22s---------------------------pounds	117	112	118
50s--------------------------- "	41	39	41
Average break factor---------------7/	2312	2207	2323
Yarn appearance:			
22s----------------------------grade	C+	B	C+
50s-------------------------------- "	C+	C+	C
Average yarn appearance------index 8/	100	105	95

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For footnotes see page 3

Table 1.--Results of classification, fiber tests, and carded yarn processing tests for specified varieties of cotton by state, market area, and period of harvest, processed at a card production rate of 9-1/2 pounds per hour and a twist multiplier of 4.00, Crop of 1958--Continued

Variety	Empire	Stoneville 7
State	Texas	
Market area	Brownsville	Raymondville
Percentage of variety at gin	70	75
Period of harvest	Early	Early
RAW COTTON QUALITY		
Classification (official standards)		
Grade--------------------designation	M	SM
Staple length-----------------inches	1-1/32	31/32
Fiber length (Fibrograph):		
Upper half mean---------------inches	1.02	0.97
Uniformity--------------------ratio	78	80
Fiber fineness and maturity:		
Micronaire----------------reading 1/	4.4	4.8
Fineness (Causticaire)----ug/inch 2/	4.4	5.0
Maturity (")------index 2/	80	80
Fiber tensile strength (Pressley):		
1/8" Gauge----------grams per tex 3/	20.6	21.0
Zero " ---------- " " " 3/	40.1	39.6
" " -------------1,000 p.s.i.	81	80
Nonlint content: 4/		
Visible waste----------------percent	1.9	1.2
Invisible waste-------------- "	0.6	0.7
Total nonlint content-------- "	2.5	1.9
Color of raw cotton: 5/		
Reflectance----------------------Rd	74.4	77.5
Yellowness-----------------------+b	9.1	9.0
Sugar content------------------percent	0.3	0.3
Acid-alkaline value--------pH units 6/	7.2	7.4
PROCESSING RESULTS		
Manufacturing waste:		
Total picker and card waste--percent	6.8	6.6
Neps-------per 100 sq. in. of card web	20	10
Yarn skein strength:		
22s--------------------------pounds	111	113
50s-------------------------- "	39	40
Average break factor-------------7/	2196	2243
Yarn appearance:		
22s---------------------------grade	C+	B
50s--------------------------- "	C	B
Average yarn appearance-----------8/	95	110

For footnotes see page 3.

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